

REMARKS

Applicants, their principal representatives in Germany, and the undersigned have reviewed the Final Office Action in the subject U.S. patent application, together with the prior art cited and relied on in the final rejections of the claims. In response, the claims have again been amended to even more clearly patentably define the subject invention over the prior art cited and relied upon, taken either singly or in combination. It is believed that this Amendment After Final Rejection does not raise any new issues and will not require the Examiner to conduct additional searching. It is an earnest effort to place the application in condition for allowance. Reexamination and reconsideration of the claims and allowance of the application is again respectfully requested.

As described in the Substitute Specification of the subject application, as depicted in the accompanying drawings, and as recited in the currently pending claims, the subject invention is directed to a guide element of a web processing machine. Such a guide element is depicted generally at 01 in Figs. 1a and 1b and is usable to turn a web 02 and to direct it in a different direction. As is well-known in the art, such web guides are often hollow tubes that are provided with a plurality of holes or apertures, through which air or a similar fluid can be directed. The fluid forms a cushion between the surface of the guide element and the web. The cited prior art patent No. 5,464,143 to Hansen is a suitable example of a prior art angle bar assembly. In that prior art device, the turning bar is provided with a plurality of apertures.

As may be seen in Fig. 2 of the subject application, there is provided a rigid load bearing support, generally at 07 which includes a fluid permeable support material having a circumferential outer surface with a plurality of fluid openings. A coating of a micro-porous, fluid permeable, open-pored sinter material is provided on the circumferential outer surface of the rigid load bearing support. In accordance with the present invention, as described in detail at paragraph 031 of the Substitute Specification, as depicted at 06 in Fig. 2, and as recited in currently amended claim 34, the micro-openings are embodied as a coating of a micro-porous,

air permeable, open-pored sinter material. This open-pored sinter material may be applied as a coating on the rigid load bearing support, as is recited in paragraph 035 of the Substitute Specification. The open-pored sinter material is not itself load bearing and relies on the rigid load bearing support for its support. The use of the rigid load bearing support, with its fluid permeable support material, and the coating of the open-pored sinter material provides a web guide that is effective without being wasteful of large amounts of compressed air and without making a great deal of noise. The prior art devices have been wasteful of compressed air, and the passage of that compressed air through the finite number of apertures, such as are depicted in the prior art Hansen patent, has generated a high noise level which is irritating and is potentially a hazardous work environment.

In the Final Office Action, claims 34, 37, 39, 41, 44-49, 53, 57-59, 65, 67 and 69 were rejected under 35 USC 103(a) as being obvious over U.S. patent No. 6,364,247 to Polkinghorne in view of U.S. patent No. 5,464,143 to Hansen. Claims 42 and 43 were rejected as being unpatentable over Polkinghorne in view of Hansen and further in view of JP 07-53102 to Takamasa. It was asserted that Polkinghorne discloses a linear guide having a rigid load bearing support 146 of an at least partially fluid-permeable material 154. A layer of micro-porous, air permeable material 130 was noted as covering the circumferential surface of the rigid load bearing support 146 of Polkinghorne. A plurality of micro-openings 140 were noted as being positioned in the micro-porous material. The secondary reference to Hansen was cited as showing a guide element 10 and means supporting the guide element for positioning in a selected one of two angular positions in respect to a web contacting the guide element. The JP 07-53102 reference was cited as teaching a turning bar having a porous material made of sinter metal.

Claim 34, the sole independent claim in the subject U.S. patent application, has been amended to further patentably define the subject invention. The language of dependent claims 42 and 44 has been added to independent claim 34. In addition, the language of claim 34 has

been revised to more clearly define the subject invention and to utilize the language used in the Substitute Specification specifically with respect to the application of the sinter material on the surface of the rigid load bearing support. It is believed that claim 34, as currently amended, is not rendered obvious by the combination of Polkinghorne, Hansen and Takamasa for the following reasons.

Referring initially to the Polkinghorne reference, there is shown a pneumatic flotation device for web processing. A method for making that pneumatic flotation device is also described. As may be seen in Figs. 4 and 5, a tubular support, generally at 140, is provided with a plurality of spaced bores 154. A micro-porous sheet, generally at 130, is applied to the outer surface of the tubular support 146. That micro-porous sheet 130 is depicted in detail, in Fig. 2 and including an interior layer 134 of an open weave metal wire cloth or fabric. A microporous outer layer 132 is joined to the open metal layer 134.

Referring to Column 3, lines 59 and 60, the microporous layer is preferably formed of a suitable metal, such as nickel. It is formed using an electrodeposition process, as is described and depicted in detail in Figs. 7-10. In that process, a plating mask 170, that has a plurality of non-conductive detents 172, is plated with the metal, such as nickel, which is supplied by nickel bars 180. The metal that is plated into the plating mask 170 has a pattern of rigidly spaced pores 140 which are formed by the non-conductive detents 172 that exist on the plating mask 172.

As depicted in Fig. 10 of Polkinghorne, once the plating mask 170 has been plated with the metal, the wire cloth 184 is wrapped around the plating mask. As depicted in Fig. 9, that wire cloth 184 includes the metal fabric 134 and a cloth backing 186. The sheet of wire cloth 184 contacts the plating mask 170 so that all points of a first side 142 of the wire fabric 184, as depicted in Fig. 9, are in contact with the now formed metal layer 132 which has been formed on the plating mask. It is again to be noted that the metal layer 132 has a regular pattern of pores 140 which were formed by the non-conducting detents of the plating mask 170. The now formed

metal layer 132, and the joined sheet of wire cloth 184 are removed from the plating mask 170 together and are wrapped above the outer surface of the tubular support 146 as a single, multi-layer element. The resultant structure is quite different from that of the guide element which is recited in currently amended claim 134.

In claim 134 of the subject application, as currently amended, it is recited that a coating (emphasis added) of a micro-porous, fluid permeable, open-pored sinter material is placed on the rigid load bearing support. The prior art Polkinghorne patent does not teach or suggest that structure. A coating is not the same as a multi-component sheet, such as the sheet 130 of Polkinghorne. That prior sheet 130 includes a metal layer 132, with rigidly spaced voids or apertures 140. The metal layer 132 is joined to an open weave metal fabric 134, which, as depicted in Fig. 9, can include the open wire 134, as well as a cloth backing 186. The result is clearly different from a coating of an open-pored sinter material in several regards.

The coating of the subject invention, as recited at paragraph 038 of the Substitute Specification, has a thickness of less than 1 mm. Clearly such a coating would not, by itself, be able to be self-supporting. It has to be applied, as a coating, to the underlying rigid support. In contrast, in the Polkinghorne device, it is quite clear that the micro porous sheet, which consists of at least the metal sheet 133 and the wire mesh fabric, has a much greater thickness. While the metal sheet is recited as having a thickness of 0.002 inch, the thickness of the wire cloth is not specifically recited. However, it is clear that the resultant product must be self-supporting because it is wrapped, as a separate layer, about the outer surface of the tubular support 146. This is clearly different from a "non-supporting" coating 06, as recited in the Substitute Specification at paragraph 034 thereof.

The microporous exterior layer 132 of Polkinghorne has "...a plurality of regularly spaced pores, voids or apertures 140." Each of these is formed by a non-conducting detent 172 on the plating mask 170. These voids or apertures 140 are thus a plurality of regularly spaced holes through which the compressed air passes. Again, such a pattern of regularly spaced holes is not

the same as an open-pored sinter material, as recited in claim 34. The benefit of a sinter material is the much more uniform cushion of fluid that it produces. With an arrangement of regularly spaced voids, there is still a non-uniform fluid cushion formed on the surface of the guide element. In this regard, the Examiner is requested to note the discussion at paragraph 034 of the Substitute Specification where the uniform distribution of the layer of air exiting at the outer surface of the open-pored sinter material 06 is discussed. The Examiner is also asked to note the discussion, at the end of that paragraph, of the difference between a non-supporting coating 06 in accordance with the present invention, and a device wherein the support is configured as a self-supporting device, which is supported only at the ends of a forme. Such a device is depicted in the prior art Takamasa reference.

It would not be obvious to combine the structure depicted in the JP 07-053102 reference to Takamasa with the Polkinghorne device to arrive at the structure of the guide element, as recited in currently amended claim 34. The Takamasa device is directed to a web converting and drying device that utilizes a self-supporting tube or roll bar, generally at 10. The entire roll bar 10 is made of sintered metal. It is the equivalent of the angle bar shown in the Hansen reference, except that the Hansen device is not recited as being made of sintered metal. A sintered metal roll bar, such as the one depicted in the Japanese 07-053102 reference, must have a suitable thickness so that it will be self-supporting. The use of sintered metal to make such a self-supporting roll bar 10 results in a substantial resistance to air flow through the sintered metal. The rather random array of micro openings that are formed in a sintered material result in a number of such openings that, in a substantially thick, self-supporting structure, do not communicate with the outer surface of the structure. The result is that all of the micro openings do not extend through the entire thickness of such a relatively thick, self supporting roll tube such as the one shown at 10 in the Japanese reference. It will thus require a high pressure, high volume fluid flow to provide the necessary support cushion at the outer surface of the Japanese device.

Any combination of the Japanese device, with the Polkinghorne device, would not render the subject invention, as recited in currently amended claim 34, unpatentable. Since the Japanese device is directed to a self-supporting tube, its logical substitution in the Polkinghorne device, would be for the tubular support 146 instead of, as asserted by the Examiner, a replacement for the micro porous sheet 130. There is no teaching for suggestion, in either document, of the substitution suggested by the Examiner.

The combination of Polkinghorne and JP 07-053102, as suggested by the Examiner, is based on the disclosure of the subject application, not on any teachings in the two documents. As noted above, JP 07-053102 is directed to a self-supporting roll bar that is made, in its entirety, of a sinter metal. It would logically serve as a replacement for the pneumatic tubular support 146 of Polkinghorne. In the Polkinghorne reference, the micro-porous sheet 130 is a self-supporting, multi-layer structure, as discussed above. It is formed separately from the pneumatic tubular support 146 in an electrodeposition process, as seen in Figs. 7-10. Once the sheet of porous metal is electroformed, in accordance with the flow chart depicted in Fig. 6 of Polkinghorne, it is wrapped with a sheet of wire cloth. After the wire cloth has been electrodeposited onto the sheet of metal, that resulting multi-layer assembly is attached to the tubular support 146. There is no teaching or suggestion in Polkinghorne that one could substitute a non-supporting coating for the multi-layer sheet 130. There is no teaching, in JP 07-053102 of any type of a coating on a separate support. In JP 07-053102, the entire roll bar 10 is made of sinter metal. There is no basis for the Examiner's assertion that the combination of Polkinghorne and JP 07-053102 would render obvious claim 44. As discussed above, the combination of the two prior art references would still result in a porous tubular support, the sinter metal roll bar 10 of JP 07-053102, overwrapped by the multi-layer micro porous sheet 130 of Polkinghorne. That is not the structure recited in currently amended claim 34.

It is believed that the addition of the language of claims 42 and 44 to claim 34 is an earnest effort to place the subject application in condition for allowance. This addition of

features already considered by the Examiner will not require the Examiner to conduct any additional searching. Both of claims 42 and 44 originally depended from claim 34. Both were previously acted on. As indicated above, it is believed that, particularly with respect to the rejection of claim 42, the Examiner's conclusion, based on the combination of the references relied on, is incorrect. For these reasons, it is believed to be appropriate for the claims now pending to be allowed in response to this Amendment After Final Rejection.

All of the other claims in the subject application, as currently amended, depend from believed allowable, currently amended independent claim 34. They are thus also believed to be allowable.

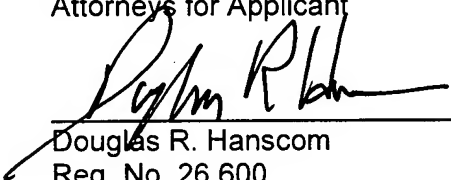
SUMMARY

Independent claim 34, and various ones of the dependent claims have been amended a second time to more clearly patentably define the subject invention over the prior art cited and relied on. For the reasons set forth in the body of this Amendment, it is believed that this Amendment After Final Rejection places the application in condition for allowance, does not raise any new issues, and will not require the Examiner to conduct any additional searching. Accordingly, allowance of the claims, and passage of the application to issue is respectfully requested.

Respectfully submitted,

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